PROCEEDINGS

OF THE

ROYAL SOCIETY OF LONDON

SERIES B

CONTAINING PAPERS OF A BIOLOGICAL CHARACTER

VOL. LXXX

LONDON:

PRINTED FOR THE ROYAL SOCIETY AND SOLD BY
HARRISON AND SONS, ST. MARTIN'S LANE,
PRINTERS IN ORDINARY TO HIS MAJESTY.

DECEMBER, 1908.

LONDON:
HARRISON AND SONS, PRINTERS IN ORDINARY TO HIS MAJESTY,
ST. MARTIN'S LANE.

CONTENTS.

SERIES B. VOL. LXXX.

No. B 536.—February 4, 1908.

PAGE

Further Results of the Experimental Treatment of Trypanosomiasis in Rats; being a Progress Report of a Committee of the Royal Society. By H. G. Plimmer, F.L.S., and J. D. Thomson, M.B., C.M. Communicated by Sir Ray Lankester, K.C.B., F.R.S., Chairman of the Tropical Diseases Committee. (Plate 1) 1

The Influence of Increased Barometric Pressure on Man. No. 4.—The Relation of Age and Body Weight to Decompression Effects. By Leonard Hill, F.R.S., and M. Greenwood, Jun., M.R.C.S. 12

On the Distribution of the Different Arteries supplying the Human Brain. By Charles E. Beevor, M.D. Lond., F.R.C.P. Communicated by Professor David Ferrier, F.R.S. (Abstract) 25

On the Cranial and Facial Characters of the Neandertal Race. By W. J. Sollas, Sc.D., LL.D., Professor of Geology in the University of Oxford. (Abstract)... 28

On the Supposed Extracellular Photosynthesis of Carbon Dioxide by Chlorophyll. By Alfred J. Ewart, D.Sc., Ph.D., F.L.S. Communicated by Professor J. Bretland Farmer, F.R.S. 30

On the Occurrence of Post-tetanic Tremor in Several Types of Muscle. By David Fraser Harris, M.D., B.Sc. (Lond.), Lecturer on Physiology and Histology at the University of St. Andrews. Communicated by John G. McKendrick, M.D., F.R.S. 37

On Reciprocal Innervation of Antagonistic Muscles. Eleventh Note.—Further Observations on Successive Induction. By C. S. Sherrington, D.Sc., F.R.S. ... 53

No. B 537.—March 13, 1908.

Address of the President, Lord Rayleigh, O.M., D.C.L., at the Anniversary Meeting on November 30, 1907 71

On the Inheritance of Eye-colour in Man. By C. C. Hurst. Communicated by W. Bateson, F.R.S. 85

PAGE

On Some Features in the Hereditary Transmission of the Self-black and the "Irish" Coat Characters in Rats.—Paper I. By Geo. P. Mudge, A.R.C.Sc. Lond., F.Z.S., Lecturer on Biology, London Hospital Medical College (University of London), and the London School of Medicine for Women (University of London). Communicated by A. D. Waller, F.R.S..... 97

On the Result of Crossing Round with Wrinkled Peas, with Especial Reference to their Starch-grains. By A. D. Darbishire, Royal College of Science, London. Communicated by J. Bretland Farmer, F.R.S..... 122

Localisation of Function in the Lemur's Brain. By F. W. Mott, M.D., F.R.S., and W. D. Halliburton, M.D., F.R.S. (Plates 2—4)..... 136

No. B 538.—April 10, 1908.

On the Structure of *Sigillaria scutellata*, Brongn., and other Eusigillarian Stems, in Comparison with those of other Palæozoic Lycopods. By E. A. Newell Arber, M.A., F.L.S., F.G.S., Trinity College, Cambridge; University Demonstrator in Palæobotany, and Hugh H. Thomas, B.A., formerly Scholar of Downing College, Cambridge. Communicated by D. H. Scott, F.R.S. (Abstract)..... 148

Dietetics in Tuberculosis: Principles and Economics. By Noel Dean Bardswell, M.D., M.R.C.P., F.R.S. (Edin.), Medical Superintendent, King Edward VII Sanatorium, and John Ellis Chapman, M.R.C.S., L.R.C.P., Medical Superintendent, Coppin's Green Sanatorium. Communicated by Sir T. Clifford Allbutt, K.C.B., F.R.S..... 151

On the Weight of Precipitum obtainable in Precipitin Interactions with Small Weights of Homologous Protein. By Professor D. A. Welsh and Dr. H. G. Chapman. Communicated by Dr. C. J. Martin, F.R.S. 161

Observations upon Phagocytosis carried out by Means of Melanin to Ascertain more particularly whether the Opsonic Index is Identical with the Hæmophagocytic Index. By S. G. Shattock and Leonard S. Dudgeon. Communicated by Professor J. Rose Bradford, For. Sec. R.S. 165

A Contribution to the Study of the Mechanism of Respiration, with Especial Reference to the Action of the Vertebral Column and Diaphragm. By J. F. Halls Dally, M.A., M.D. Cantab. Communicated by Professor Sir T. Clifford Allbutt, K.C.B., F.R.S..... 182

No. B 539.—May 14, 1908.

The Influence of Temperature on Phagocytosis. By J. C. G. Ledingham, M.B., B.Sc., M.A., Assistant Bacteriologist, Lister Institute, London. Communicated by Dr. C. J. Martin, F.R.S..... 188

Nitrification in Acid Soils. By A. D. Hall, M.A., N. H. J. Miller, Ph.D., and C. T. Gimingham. Communicated by H. E. Armstrong, Ph.D., LL.D., F.R.S. 196

The Origin and Destiny of Cholesterol in the Animal Organism. Part I.—On the so-called Hippocoprosterol. By Charles Dorée, Lindley Student of the University of London, and J. A. Gardner, Lecturer in Physiological Chemistry, University of London. Communicated by Dr. A. D. Waller, F.R.S..... 212

PAGE

The Origin and Destiny of Cholesterol in the Animal Organism. Part II.—The Excretion of Cholesterol by the Dog. By Charles Dorée, Lindley Student of the University of London, and J. A. Gardner, Lecturer on Physiological Chemistry, University of London. Communicated by Dr. A. D. Waller, F.R.S. 227

Bacteria as Agents in the Oxidation of Amorphous Carbon. By M. C. Potter, M.A., F.L.S., Professor of Botany, Armstrong College, in the University of Durham. Communicated by J. B. Farmer, F.R.S. 239

The Antagonistic Action of Calcium upon the Inhibitory Effect of Magnesium. By S. J. Meltzer and John Auer. Communicated by Professor E. H. Starling, F.R.S. 260

Post-tetanic Tremor. (Supplementary Note.) By David Fraser Harris, M.D., B.Sc. (London) 262

No. B 540.—June 23, 1908.

The Glycogenic Changes in the Placenta and the Fœtus of the Pregnant Rabbit: a Contribution to the Chemistry of Growth. By J. Lochhead, M.A., M.D., B.Sc. (Carnegie Scholar), and W. Cramer, Ph.D., D.Sc. (Lecturer on Physiological Chemistry, University of Edinburgh). Communicated by E. A. Schäfer, F.R.S. 263

On the Maturation of the Ovum in the Guinea-pig. By J. E. Salvin Moore, A.R.C.S., F.L.S., Professor of Experimental and Pathological Cytology, Liverpool, and Miss F. Tozer, B.Sc. London. Communicated by J. Bretland Farmer, F.R.S. (Plates 5—7)..... 285

The Life-history of *Trypanosoma equiperdum*. By J. E. Salvin Moore, Professor of Experimental and Pathological Cytology, University of Liverpool, and Anton Breinl, Director of the Runcorn Research Laboratories, Liverpool School of Tropical Medicine. Communicated by Sir Rubert Boyce, F.R.S. (Plates 8 and 9) 288

The Alcoholic Ferment of Yeast-juice. Part III.—The Function of Phosphates in the Fermentation of Glucose by Yeast-juice. By Arthur Harden and William John Young (Biochemical Laboratory of the Lister Institute of Preventive Medicine). Communicated by C. J. Martin, F.R.S. 299

Studies on Enzyme Action. XI.—Hydrolysis of Raffinose by Acids and Enzymes. By H. E. Armstrong, F.R.S., and W. H. Glover, Ph.D. 312

Studies on Enzyme Action. XII.—The Enzymes of Emulsin. By H. E. Armstrong, F.R.S., E. F. Armstrong, D.Sc., and E. Horton, B.Sc. 321

A Further Note on the Nutrition of the Early Embryo: with Special Reference to the Chick. By E. Emrys-Roberts, M.B., Ch.B. Victoria and Liverpool, Subcurator of the Pathological Museum (Gynæcological Section), University of Liverpool. Communicated by Professor C. S. Sherrington, F.R.S..... 332

No. B 541.—August 22, 1908.

PAGE

On Reciprocal Innervation in Vaso-motor Reflexes and the Action of Strychnine and of Chloroform thereon. By W. M. Bayliss, D.Sc., F.R.S. 339

The Action of Resin and Allied Bodies on a Photographic Plate in the Dark. By William J. Russell, Ph.D., F.R.S. (Plates 10—12) 376

On Some Features in the Hereditary Transmission of the Albino Character and the Black Piebald Coat in Rats.—Paper II. By George Percival Mudge, A.R.C.Sc. Lond., Lecturer on Biology at the London Hospital Medical College (University of London) and at the London School of Medicine for Women (University of London). Communicated by Professor A. D. Waller, F.R.S. ... 388

Have Trypanosomes an Ultra-microscopical Stage in their Life-history? By Colonel David Bruce, C.B., F.R.S., Army Medical Service, and Captain H. R. Bateman, Royal Army Medical Corps 394

Diphtheria Antitoxin. By John Mellanby, M.D., George Henry Lewes Student. Communicated by Professor J. N. Langley, F.R.S. 399

No. B 542.—September 23, 1908.

Croonian Lecture :—The Principles of the Minute Structure of the Nervous System as revealed by Recent Investigations. By Professor Gustaf Retzius, For. Mem. R.S. 414

A Study of the Variations in the Secretion of Hydrochloric Acid in the Gastric Contents of Mice and Rats as compared with the Human Subject, in Cancer. By S. Monckton Copeman, M.D. Cantab., F.R.S., and H. Wilson Hake, Ph.D., F.I.C., F.C.S. 444

No. B 543.—November 20, 1908.

The Giant Nerve Cells and Fibres of *Halla parthenopeia*. By J. H. Ashworth, D.Sc., Lecturer in Invertebrate Zoology in the University of Edinburgh. Communicated by Professor J. C. Ewart, M.D., F.R.S. (Abstract) 463

Preliminary Account of the Habits and Structure of the Anaspididæ, with Remarks on some other Fresh-water Crustacea from Tasmania. By Geoffrey W. Smith, M.A., Fellow of New College, Oxford. Communicated by Professor E. B. Poulton, F.R.S. (Plate 13)..... 465

Some Experiments made to Test the Action of Extract of Adrenal Cortex. By S. G. Shattock and C. G. Seligmann. Communicated by John Rose Bradford, For. Sec. R.S. 473

Further Results of the Experimental Treatment of Trypanosomiasis: being a Progress Report to a Committee of the Royal Society. By H. G. Plimmer, F.L.S., and H. R. Bateman, Captain R.A.M.C. Communicated by J. Rose Bradford, M.D., F.R.S..... 477

Complete Survey of the Cell Lamination of the Cerebral Cortex of the Lemur. By Dr. F. W. Mott, M.D., F.R.S., and Agnes M. Kelley. (Plates 14—18)..... 488

PAGE

An Investigation on the Anatomical Structure and Relationships of the Labyrinth in the Reptile, the Bird, and the Mammal. By Albert A. Gray, M.D., F.R.S.E. Communicated by John G. McKendrick, M.D., F.R.S. (Plates 19 and 20)..... 507

No. B 544.—December 31, 1908.

The Natural Mechanism for evoking the Chemical Secretion of the Stomach (Preliminary Communication). By J. S. Edkins and M. Tweedy. Communicated by Professor E. H. Starling, F.R.S..... 529

Further Observations on Welwitschia. By H. H. W. Pearson, Sc.D., F.L.S. Communicated by Professor A. C. Seward, F.R.S. (Abstract) 530

On the Presence of Hæm-agglutinins, Hæm-opsonins, and Hæmo-lysins in the Blood obtained from Infectious and Non-Infectious Diseases in Man. (Preliminary Report.) By Leonard S. Dudgeon, F.R.C.P. Lond. Communicated by Professor T. G. Brodie, F.R.S. 531

Preliminary Note on the Occurrence of a New Variety of Trypanosomiasis on the Island of Zanzibar. By Alexander Edington, M.D. Edin., D.P.H. Edin. and Glasgow, F.R.S. Edin. Communicated by J. Rose Bradford, For. Sec. R.S. ... 545

On Methods for the Continuous (Photographic) and the Quasi-Continuous Registration of the Diurnal Curve of the Temperature of the Animal Body. By Arthur Gamgee, M.D. F.R.C.P., F.R.S., Hon. LL.D. Edin. ; Emeritus Professor of Physiology in the Owens College, University of Manchester. (Abstract) 550

On Reciprocal Innervation of Antagonistic Muscles. Twelfth Note.—Proprioceptive Reflexes. By C. S. Sherrington, D.Sc., F.R.S. 552

Reciprocal Innervation of Antagonistic Muscles. Thirteenth Note.—On the Antagonism between Reflex Inhibition and Reflex Excitation. By C. S. Sherrington, D.Sc., F.R.S. 565

OBITUARY NOTICES OF FELLOWS DECEASED iii

Index lxxxv